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Deployment of Microsoft Windows Server 2003, Enterprise Edition for 64-bit Itanium-based systems on ProLiant DL590/64 servers

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Abstract

This document describes the level of support available for the Microsoft® Windows® Server 2003, Enterprise Edition for 64-bit Itanium-based systems operating system on ProLiant DL590/64 servers including:

- Recommended system configurations
- Supported software, storage options, and network adapters
- Recommended installation procedures
- Support limitations including known issues with workarounds

This document is intended to augment the documentation provided with the ProLiant DL590/64 server and the documentation provided with the Microsoft Windows Server 2003, Enterprise Edition for 64-bit Itanium-based systems operating system. It is offered with the intent of enhancing the user's experience of Windows on the Itanium-based platform.

For easier readability, the Microsoft Windows Server 2003, Enterprise Edition for 64-bit Itanium-based operating system will be referred to as Windows Server 2003, Enterprise Edition from this point forward.

Introduction to the architecture

The Intel® Itanium® architecture, upon which the ProLiant DL590/64 is built, is a dramatic departure from the IA-32 architecture. The Intel® Itanium® processor and platforms are capable of using 64-bits of directly addressable memory and can execute Intel® Itanium® instructions directly.

Apart from the processor enhancements, the supporting elements of the ProLiant DL590/64 platform provide a host of new features that make the ProLiant DL590/64 different from other members of the ProLiant family of servers. The following list highlights some of the more significant differences:

- Standard Basic I/O Services (BIOS) has been replaced with Extensible Firmware Interface (EFI)
 - EFI boot manager functions replace the old BIOS menu functions
 - EFI partition(s) on disks, CDs or floppies provide a means of storing components that support the EFI environment
- ROM is more intelligent in the selection of settings and defaults, reducing the effort and attention required by the system operator during initial setup
- 8-bit (DOS) and 16-bit applications are not supported, though well-behaved 32-bit Windows applications are supported in compatibility mode
- Master Boot Record (MBR) boot devices have been replaced with GUID Partition Table (GPT) devices

Default configurations

Table 1 lists the default configurations of the ProLiant DL590/64 server models.

Table 1. ProLiant DL590/64 Default Configurations

	Configuration 1	Configuration 2
Processors	2 x 733 MHz/2 MB (4 proc sockets)	2 x 800 MHz/4 MB (4 proc sockets)
Memory boards	1 memory board (32 DIMM sockets) (64 DIMM socket capable with optional second memory board)	2 memory boards (64 DIMM sockets)
SDRAM	1 GB (4 x 256 MB)	4 GB (8 x 512 MB)
Memory expansion[1]	Multiples of 4 C100 v1.2 CL2 up to 32 GB	Multiples of 4 C100 v1.2 CL2 up to 64 GB
Hard drives	Optional	Optional
Power supply	1 (support for 3)	2 (support for 3)
System power module	1 (support for 3)	2 (support for 3)
PCI hot plug	Standard	Standard
Redundant hot plug fans	Standard	Standard
Network interface	Dual Port 10/100	Dual Port 10/100
RAID controller	Embedded	Embedded
LS-120	Standard	Standard
CD–ROM	Standard	Standard
Form factor	7U Rack	7U Rack

Footnotes:

1. Memory for the ProLiant DL590/64 server must meet very tight specifications due to timing requirements of the memory support chipset used in the server. All memory used within the ProLiant DL590/64 server must conform to those exact specifications. For this reason, HP does not support transferring memory modules from other non-Itanium platforms into the ProLiant DL590/64 server.

Introduction to Windows Server 2003, Enterprise Edition

Windows Server 2003, Enterprise Edition is the operating system Microsoft recommends for servers running applications such as networking, messaging, inventory and customer service systems, databases, and e-commerce websites in medium and large enterprises. It is available in both 32-bit and 64-bit editions with support for up to 1 to 8P servers. The major difference from Standard Edition is support for higher-performance, more scalable servers, and the ability to cluster servers to handle larger workloads and provide enhanced availability. The 32-bit version supports 32 GB of memory and the 64-bit version supports 64 GB on Itanium® 2-based servers.

Supported software

Assemble the following software packages to facilitate your installation, optimize performance, and manage your Windows Server 2003, Enterprise Edition environment.

Table 2 includes the minimum versions of ProLiant utilities and other software needed to operate with Windows Server 2003, Enterprise Edition; these versions can be found at the locations listed below. These components are part of the ProLiant Support Pack (PSP) for Windows Server 2003 64-Bit Edition Version1.04A, introduced to support the 64-bit version of Windows Server 2003, Enterprise Edition on the ProLiant DL590/64 server. Tables 4 and 5 list the storage and NIC drivers associated with PSP 1.04A.

Note: PSP 1.04A is intended for use only with the ProLiant DL590/64 server and not with any other HP servers running the 64-bit version of Windows Server 2003, Enterprise Edition.

Table 2. Supported ProLiant Utilities and Value-add Software

Description		Version	Location
ProLiant Support Pack for Microsoft Windows Server 2003 64-Bit Edition Version 1.04A[1]	Compaq Advanced System Management Controller Driver (CPQASM.SYS)	5.27.3718.0	http://h18023.www1.hp.com/support/files/server/us/download/17848.html
	Compaq PCI Hot Plug Controller Driver (CPQPHP64.SYS)	6.1.2.5	
	Compaq Array Configuration Utility XE	6.30.11.0	
	Compaq Enhanced Integrated Management Display Service	1.0.0.0	
	Compaq ProLiant Administrative Tools	1.0.0.7	
	Compaq Survey Utility	2.36.12.0	
	Compaq Foundation Agent	5.10.0.0	
	Compaq NIC Agent	5.10.0.0	
	Compaq Server Agent	5.10.1.0	
	Compaq Storage Agent	6.20.0.0	
ProLiant DL590/64 Server Support Software CD		1.00	Included with server

Footnote:

1. The contents listing of PSP 1.04A above does not include the storage and network interface controller drivers. These drivers are listed in Table 4 and Table 5, respectively.

Notes:

- All ProLiant support software that is supported for use on the ProLiant DL590/64 server is included on the ProLiant DL590/64 Server Support Software CD and in PSP 1.04A.
- PSP 1.04A is to be used with Windows Server 2003, Enterprise Edition only. Systems running prior versions of Windows Server 2003, including Windows Advanced Server, Limited Edition 1.0 and1.1, should continue to use Compaq Support Paq Versions 1.00A and 1.02A, respectively.

IMPORTANT: Even though Microsoft ships a 64-bit version of Microsoft Windows XP Professional Edition, HP does not support the use of the Professional Edition on server platforms.

Device support

Windows Server 2003, Enterprise Edition has a true 64-bit kernel. Any code that executes in kernel mode, such as drivers, must be developed specifically to interface correctly with the 64-bit kernel. Therefore, drivers that were developed for any 16-bit or 32-bit versions of Windows will not function properly with Windows Server 2003, Enterprise Edition.

The following storage drivers in PSP 1.04A do not have digital signatures associated with them; however, they should still be installed and used for proper operation:

Table 3. Options without Digital Signatures

Option	Driver
64-bit/66-Mhz Fibre Channel Host Adapter	CPQFCALM.SYS
StorageWorks Fibre Channel Array Controller Event Driver	CPQFCAC.SYS
StorageWorks Fibre Channel Filter Driver	CPQFCFTR.SYS
Integrated Smart Array Controller	CPQARRY2.SYS
Drive Array Notification	CPQDAEN.SYS

Supported storage options

IMPORTANT: Providing support for storage options on the ProLiant DL590/64 requires drivers that have been ported to the Intel® Itanium® architecture. The 32-bit drivers used on other ProLiant server platforms will not load or function properly on ProLiant DL590/64 servers. As a result, only the storage options displayed in Table 3 are supported for use in ProLiant DL590/64 servers. Attempting to install unsupported storage options and drivers into the ProLiant DL590/64 may render the system unusable.

Table 4 lists supported ProLiant storage options and drivers needed to interface with Windows Server 2003, Enterprise Edition.

Table 4. Supported ProLiant Storage Options

Option	Driver	Location
Compaq 4.3 - 36-GB Hard Disk Drives	DISK.SYS	Windows CD
Compaq 4x-32x CD-ROM Drives	N/A	Windows CD
64-bit/66MHz Dual Channel Wide Ultra 3 SCSI Adapter	ADPU160M.SYS	Windows CD
64-bit/66-Mhz Fibre Channel Host Adapter	CPQFCALM.SYS	PSP 1.04A
StorageWorks Fibre Channel Array Controller Event Driver	CPQFCAC.SYS	PSP 1.04A
StorageWorks Fibre Channel Filter Driver	CPQFCFTR.SYS	PSP 1.04A

Option	Driver	Location
Integrated Smart Array Controller	CPQARRY2.SYS	PSP 1.04A
Drive Array Notification	CPQDAEN.SYS	PSP 1.04A
Smart Array 532 Controller	CPQCISSM.SYS	PSP 1.04A
Smart Array 5300 Controller	CPQCISSM.SYS	PSP 1.04A
Smart Array 5300 Notification Driver	CPQCISSE.SYS	PSP 1.04A

Notes:

- Many of these devices have firmware upgrades available through the Options ROMPaq. The latest version of the Options ROMPaq is available on the HP software and drivers website at http://h18023.www1.hp.com/support/files/server/us/index.html.
- Many of the devices whose drivers are on the Windows media have driver upgrades available from PSP 1.04A. After installing Windows, users should update those drivers to enhance their reliability and functionality. The drivers located on the Windows CD do not include ProLiant management functionality.

Supported network interface controllers

Table 5 lists ProLiant network interface controllers supported for use with the ProLiant DL590/64 server running Windows Server 2003, Enterprise Edition.

Table 5. Supported ProLiant Network Interface Controllers

NIC	Driver	Location
Fast Ethernet NICs and Modules		
NC3123 Fast Ethernet NIC (PCI 10/100 WOL)	N100645.SYS	Windows CD
NC3134 Fast Ethernet NIC (64 PCI Dual Port 10/100)	N100645.SYS	Windows CD
NC3135 Fast Ethernet Module (Dual Port 10/100 Upgrade Module for NC3134)	N100645.SYS	Windows CD
Gigabit NICs and Modules		
NC6132 Gigabit Module (1000 SX Upgrade Module for NC3134)	N1000645.SYS	Windows CD
NC6133 Gigabit Module (1000 LX Upgrade Module for NC3134)	N1000645.SYS	Windows CD
NC3133 Fast Ethernet Module (100FX Upgrade Module for NC3134)	N100645.SYS	Windows CD
NC6136 Gigabit Server Adapter (64-bit/66MHz, PCI, 1000 SX)	N1000645.SYS	Windows CD
NC7131 Gigabit Server Adapter (64-bit/66MHz, PCI, 10/100/1000-T)	N1000645.SYS	Windows CD

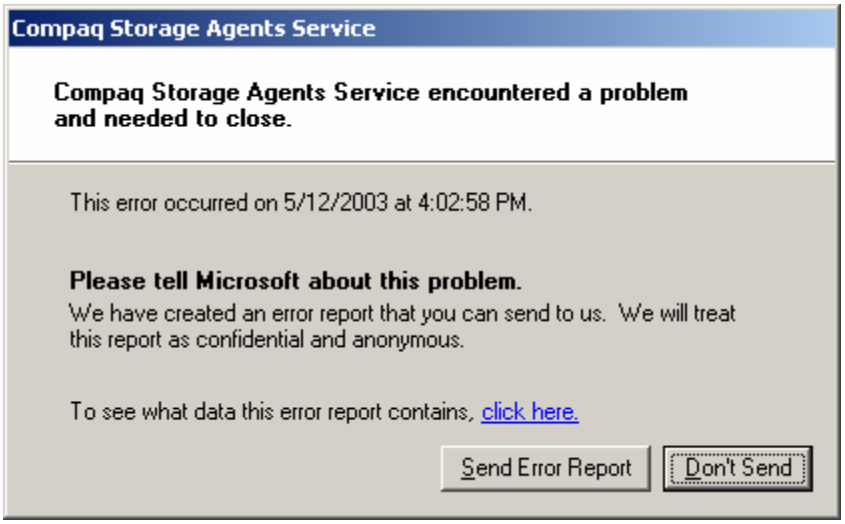
Note: Many of the devices whose drivers are on the Windows media have driver upgrades available from the ProLiant Support Pack for Microsoft Windows Server 2003 64-Bit Edition. After installing Windows, users should update those drivers to enhance their reliability and functionality.

Upgrading existing Windows Server 2003 installations

HP strongly recommends a fresh installation of the final release of Windows Server 2003, Enterprise Edition followed by the installation of PSP 1.04A. However, HP has had some success during limited testing of upgrades from previous versions that customers may have purchased, for example, Windows Advanced Server, Limited Edition 1.1.

After upgrading the OS, you may see error messages associated with HP drivers, such as the following:

Figure 1. Warning Message for Storage Service



You may ignore these messages (click **Don't Send**) as PSP 1.04A will completely re-install the necessary HP drivers for Windows Server 2003, Enterprise Edition.

Installation procedures

Installation of the ProLiant DL590/64 server occurs in five distinct phases:

- Pre-Installation Checks
- EFI Phase
- Text Mode Setup
- Graphical User Interface
- Post-Installation Updates

To install Windows Server 2003, Enterprise Edition on the ProLiant DL590/64 server so that it is fully supported by HP and Microsoft, first read the following sequence of steps completely and then follow them carefully.

Pre-installation checks

1. Verify the completeness and correctness of your hardware configuration before powering on your system.

 - Make sure that you are using only supported storage options (see Table 3).
 - Confirm that you are using only supported network interface controllers (see Table 4).
 - Ensure that you have not installed any memory that was not provided for use with Itanium-based platforms.
 - Make certain that you have installed some type of disk storage (not included with the system), either on the internal storage bays or as external storage.
 - Confirm that you have cabled the system correctly, according to instructions included with the *ProLiant DL590/64 Setup and Installation Guide* (included with the server).

EFI phase

2. Power the server up and run through the preliminary setup and configuration steps documented in the *ProLiant DL590/64 Setup and Installation Guide* (included with the server).

3. During initialization of the Integrated Array Controller, the following text will be displayed to give the user a chance to configure any internally attached hard drives:

 Press *<F8> to use the Option ROM Configuration for Arrays Utility*

 Press **F8** to configure the drive onto which the OS will be loaded.

Text mode setup phase

4. Insert the Microsoft Windows Server 2003, Enterprise Edition CD into CD-ROM to begin installation. As the system starts up watch closely for the prompt "Press any key to boot from CD-ROM." The prompt only lasts for a few seconds. Be prepared to react when it appears.

 - Allow Setup to format the partition that will be used as the system disk. This will include creation of a System Partition as well as a reserved partition. Both the System Partition and the reserved partition are required by the operating system. The system disk must be formatted as a GPT and cannot be formatted as MBR.
 - The system partition contains the OSLOADER image that is used to start the OS. Do not attempt to resize or remove the System Partition or the Microsoft reserved partition that are created by default when configuring the disk space on the boot device.
 - When selecting the partition that will hold the OS, be sure to select a device that has been created as a GPT device.

 IMPORTANT: Do not attempt to install the OS into either the System Partition (marked "Partition1: [FAT]") or the reserved partition (marked "Partition2 [Reserved]"). Instead, use the Unpartitioned Space on the device that contains those two partitions. Do not attempt to install Windows onto a device that has been set up as an MBR device.

Graphical user interface phase

5. Complete the standard Windows Server 2003 installation per the instructions provided in the user guide.

Note: The installation timer displayed during the GUI phase utilizes very optimistic guesses about the duration of the installation. Do not be surprised if the installation takes significantly longer than the countdown timer suggests it should take.

Post-installation updates

6. Install the Simple Network Management Protocol (SNMP).
 - Select the **Control Panel** from the Start menu.
 - Select **Add or Remove Programs**.
 - Click the **Add/Remove Windows Components** button.
 - Select **Management and Monitoring Tools** from the list of components.
 - Click the **Details** button.
 - Select **Simple Network Management Protocol** so that a checkmark is displayed in the checkbox.
 - Click the **OK** button, then the **Next** button.
 - Click the **Finish** button.
7. Remove the Windows Server 2003, Enterprise Edition CD from the CD-ROM drive.
8. Insert the ProLiant DL590/64 Server Support Software CD into the CD-ROM drive. When the CD is inserted, it automatically invokes the procedure that installs the Microsoft Virtual Machine snap-in.
9. Allow the automatically invoked procedure to install the Microsoft Virtual Machine snap-in.

IMPORTANT: Do not install the PSP from the ProLiant DL590/64 Server Support Software CD.

10. Remove the ProLiant DL590/64 Server Support Software CD from the CD-ROM drive, and reboot the system.
11. Install PSP 1.04A containing the drivers and utilities supported for use on the ProLiant DL590/64 server from the software and drivers website at http://h18023.www1.hp.com/support/files/server/us/download/17848.html.

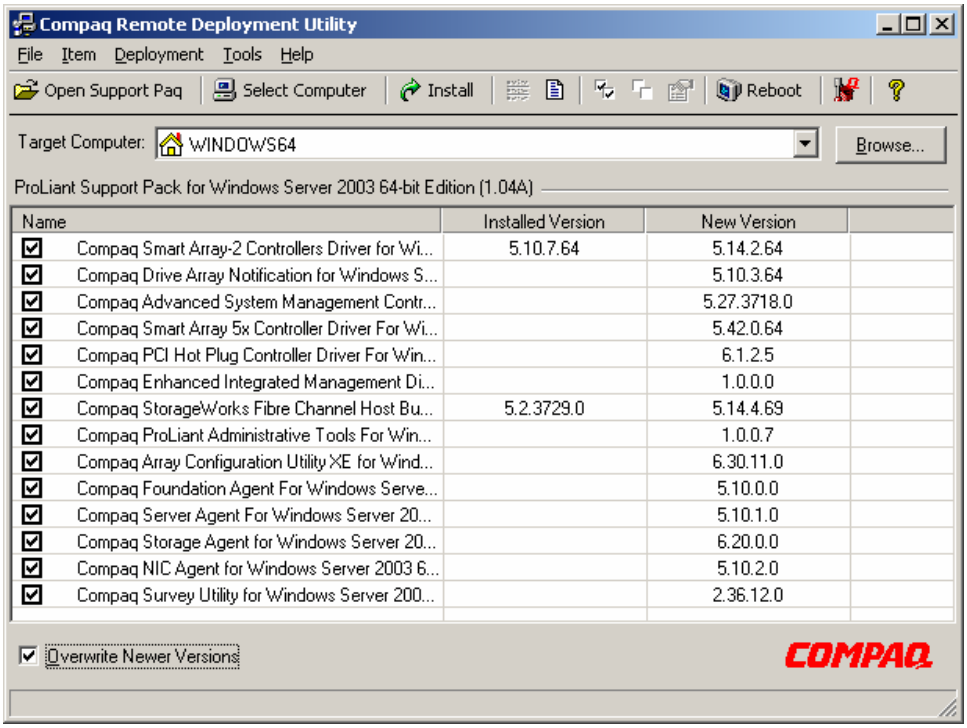
 Primary installation method (overview)

 - Run the SETUP.EXE program included with the PSP. By default, all software is selected for installation. In most circumstances this default selection should not be altered.
 - Click the Install button to proceed with the installation. Only software that is appropriate for the target system will be installed regardless of the software selected for installation. After installation of the appropriate software, the utility will display its results, including indication of software successfully installed, software not needed for the current system configuration, and any installation failures.

Primary installation method (detailed procedures)

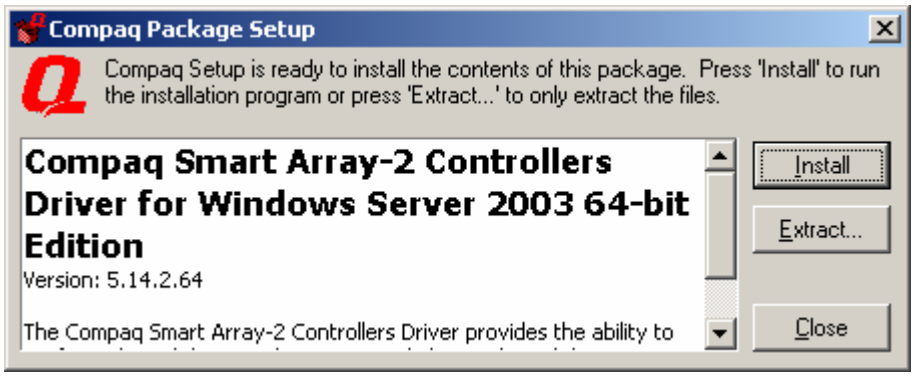
1. After OS installation, the PSP should appear (see Figure 2), showing some of the drivers installed already by the OS. The PSP contains newer drivers for these components, so you should check the **Overwrite Newer Versions** box at the bottom of the PSP screen, and then click **Install**.

Figure 2. Remote Deployment Utility Screen



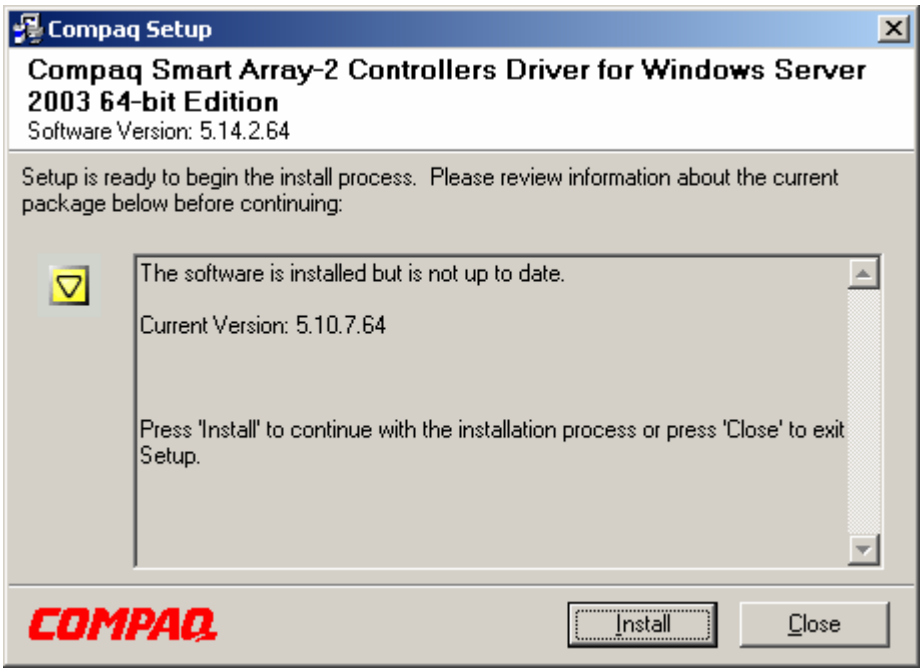
2. The typical PSP installation includes a series of self-installing components, some of which require user intervention. The first such component is the Smart Array-2 Controller Driver component (see Figure 3). Click **Install** for all such components.

Figure 3. Smart Component Screen



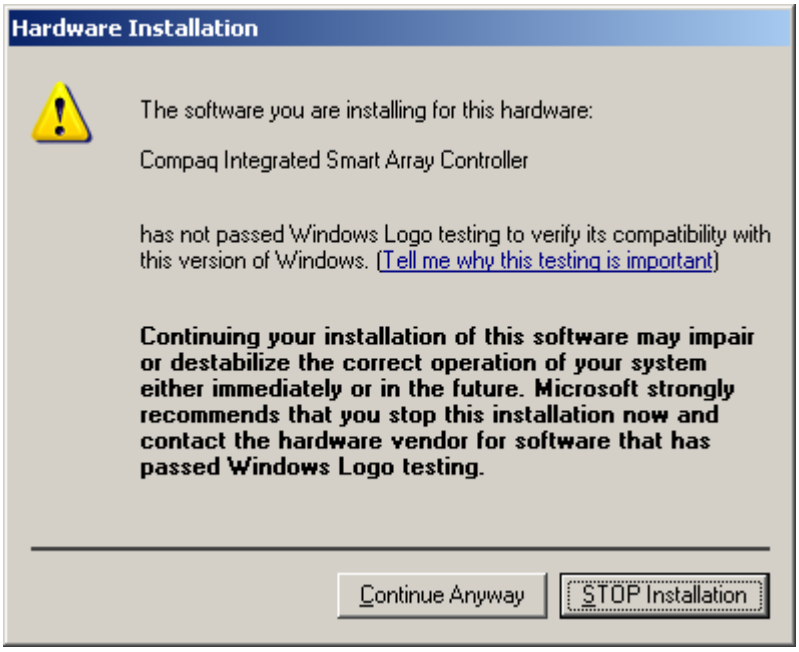
3. Since the OS has already installed a version of this driver, a message indicating that will appear (see Figure 4). Click **Install**.

Figure 4. Warning Message



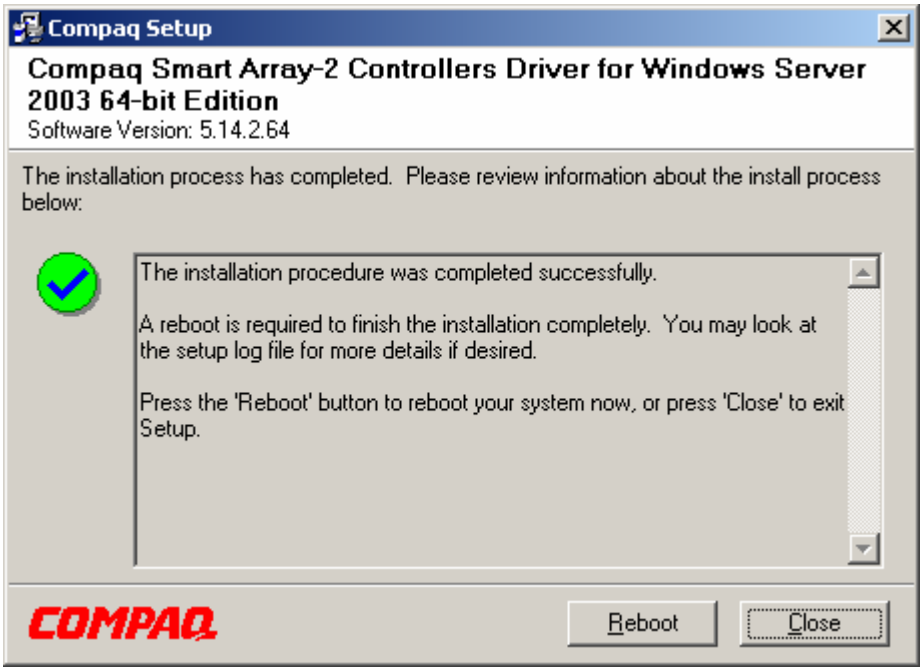
4. This particular driver does not have a digital signature (see Figure 5). Click **Continue Anyway**.

Figure 5. Digital Signature Warning



5. After successful installation, user intervention is required to continue the PSP installation. Click **Close** to complete installation of this component and continue PSP installation (see Figure 6). Clicking Reboot will discontinue the PSP installation at this point, which is not recommended.

Figure 6. Successful Installation Screen



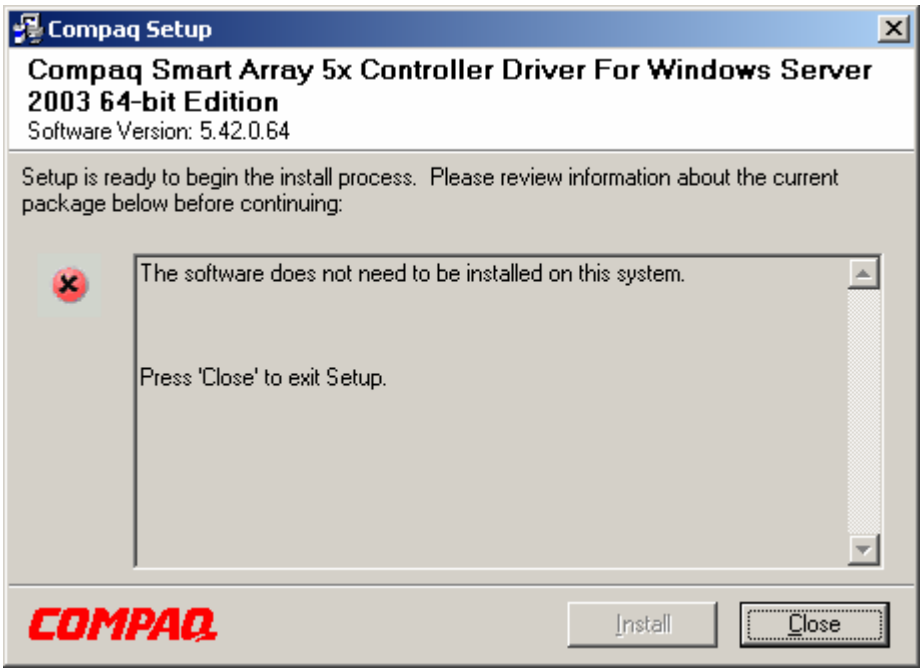
6. See Figure 7 for another unsigned driver message that may appear. Click **Yes**.

Figure 7. Security Alert Message



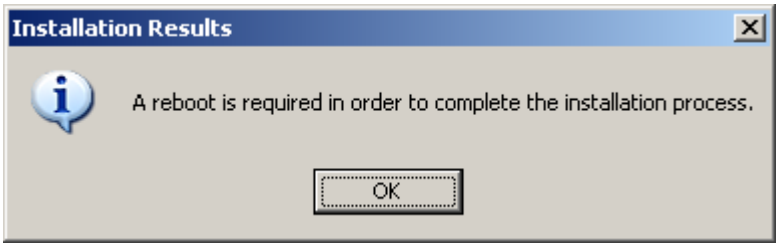
7. If no hardware option is installation, there is no need to install the driver for this option. Click **Close** to continue PSP installation (see Figure 8).

Figure 8. Software Does Not Need to Be Installed Message



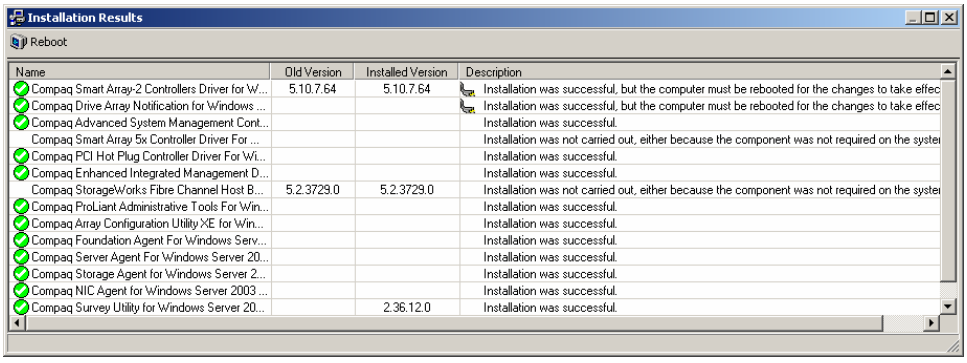
8. Upon PSP installation completion, a reboot is required (see Figure 9). Click **OK**.

Figure 9. Installation Results Message



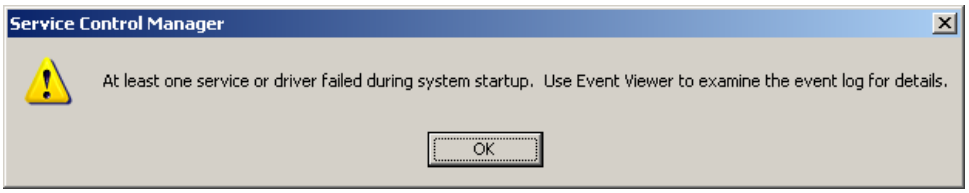
9. You will then see a PSP display similar to Figure 10. Click **Reboot**.

Figure 10. Installation Results Screen



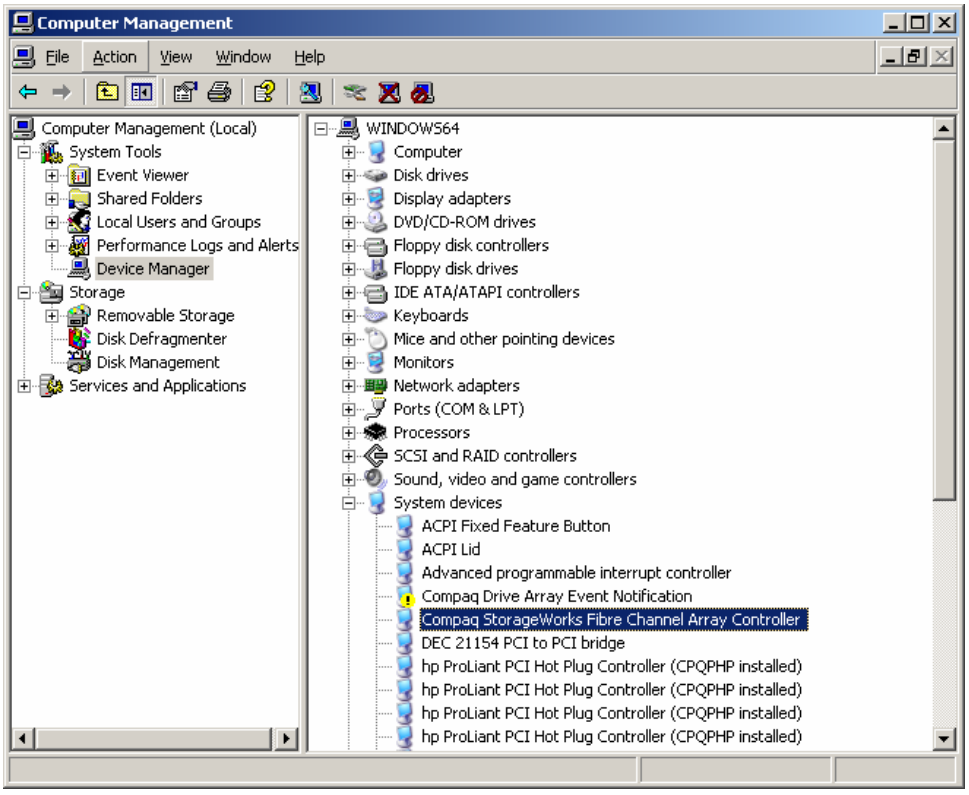
10. After the system reboots, you might get a warning like Figure 11. This warning is due the CPQDAEN driver, which is expected behavior. Click **OK**.

Figure 11. Service Control Manager Message



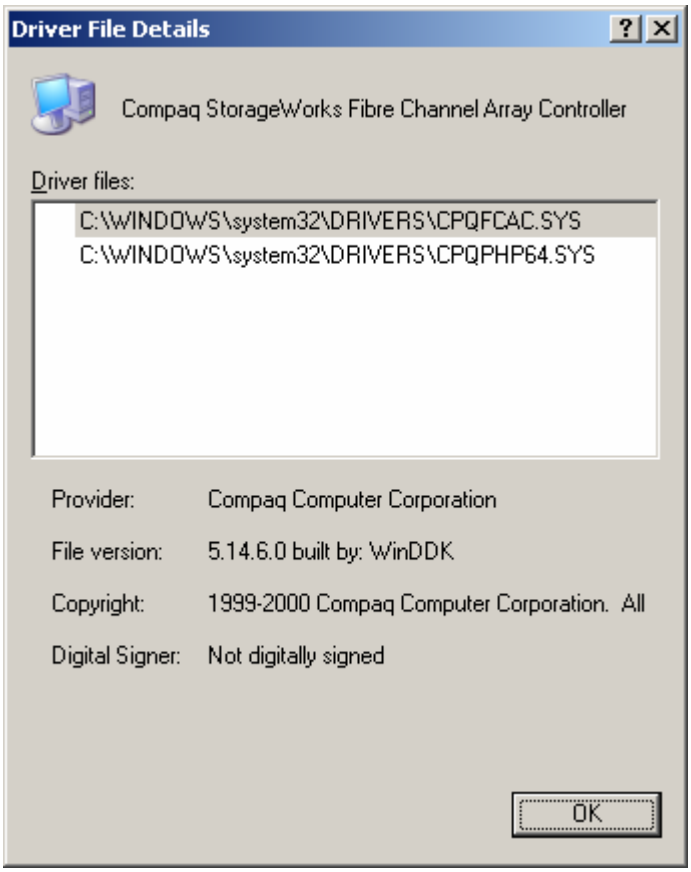
11. If your system contains one or more Fibre Channel host bust adapters (HBAs), you may need to install the associated component, or the PSP, once more. To verify correct installation, click **My Computer | Manage | Device Manager |System Devices**. The window should resemble Figure 12.

Figure 12. Computer Management Screen



12. Click **Compaq StorageWorks Fibre Channel Array Controller | Driver tab |Driver Details**. The screen should resemble Figure 13. If you only see the CPQPHP64.SYS driver listed, reinstall the Fibre Channel component or entire PSP again.

Figure 13. Driver File Details Screen



Command prompt installation

A BP000170.CMD file is also provided with the PSP for use in installing the PSP from a command prompt without user interaction. As with the SETUP.EXE program, all software appropriate for the system it is being run on will be installed.

Support limitations

This section details the known issues with running Windows Server 2003, Enterprise Edition on ProLiant DL590/64 servers and provides information about resolving them.

Table 6. Known Issues

General OS issues

Issue 1	Java applets and applications do not work with Windows Server 2003, Enterprise Edition
Description	Windows Server 2003, Enterprise Edition includes a 64-bit version of Internet Explorer 6.0 as the default browser. Unlike previous versions of Internet Explorer, Version 6.0 does not include the Java Virtual Machine snap-in. Microsoft does not produce and distribute a 64-bit version of the Java Virtual Machine snap-in. At the time of this publication, there is no Java Virtual Machine snap-in that will operate successfully with the 64-bit version of Internet Explorer 6.0.
Solution	Windows Server 2003, Enterprise Edition includes both the default 64-bit version of Internet Explorer as well as the 32-bit version of Internet Explorer. In addition, Microsoft has made the 32-bit version of the Java Virtual Machine snap-in available, both as a download from their website (www.microsoft.com/) and from HP media. HP has provided this snap-in on the ProLiant DL590/64 Server Support Software CD, along with a script that installs the snap-in and changes the default browser from the 64-bit version to the 32-bit version. The 64-bit browser does not recognize or utilize the 32-bit version of the snap-in.

Memory issues

Issue 2	Working memory taken from another system does not work in the ProLiant DL590/64 server
Description	If you transfer memory from other systems into the ProLiant DL590/64 that seems to meet the same specifications as the memory installed in ProLiant DL590/64 systems, you may find that the system rejects those memory modules. Itanium-based systems have very strict memory timing requirements that exceed the applicable industry standard specifications (C100 v1.2 CL2). As a result, not all memory that complies with that specification can be used with ProLiant DL590/64 servers. Memory modules that do not comply with the standard are not supported, including memory modules that conform to higher speed standards.
Solution	Remove all modules that are rejected by the system, and use only memory modules that have been approved for use with Itanium processors.

Storage issues

Issue 3	CPQFCAC.SYS not installed on all StorageWorks Fibre Channel boxes
Description	PSP 1.04A does not install StorageWorks Fibre Channel Array Controller Event Driver, *CPQFCAC.SYS*, for all of the attached StorageWorks Fibre Channel boxes.
Workaround	Install the Smart Component for the StorageWorks Fibre Channel Array Controller Event Driver twice. This action will ensure that *CPQFCAC.SYS* is installed for every attached StorageWorks Fibre Channel box.
Solution	Our engineers are working to provide a solution in a future version of the PSP.

Issue 4	GPT formatted partitions are not available as cluster storage
Description	By default, all partitions created under Windows Server 2003, Enterprise Edition are formatted using the GUID Partition Table (GPT) on-disk structure. Storage configured for use in cluster configurations must be formatted using Master Boot Record (MBR) structure.
Solution	Reformat the partitions to be used as cluster storage using the MBR structure.
Issue 5	Software fault tolerance volumes fail during driver update or rollback
Description	After upgrading or rolling back miniport drivers, software fault tolerance volumes (residing on disk controlled by the miniport drivers) go offline and fail. Reactivating the offline disks does bring back the volumes, but they are brought back in a failed state. This behavior occurs regardless of whether GPT or MBR disks are used.
Solution	Microsoft is committed to resolving this issue for the next version of Windows, code-named "Longhorn."
Issue 6	Storage arrays formatted on 32-bit systems do not function properly as boot devices
Description	Microsoft Windows Server 2003, Enterprise Edition boot devices are significantly different from boot devices formatted for use with 32-bit operating systems (such as Microsoft Windows XP, Microsoft Windows 2000, or Microsoft Windows NT 4.0). Differences between the boot devices for these environments include: • System Partition and Microsoft reserved partition are required to support the EFI boot environment of the 64-bit platforms. These partitions are not required or available on any of the 32-bit operating system environment boot devices. • Boot devices for Windows Server 2003, Enterprise Edition must be formatted using Global Page Table (GPT) structure. The 32-bit operating environments utilize Master Boot Record (MBR) structures.
Solution	Reformat or rebuild the partitions under Windows Server 2003, Enterprise Edition.

Issue 7	Switching between multiple controllers causes Array Configuration Utility XE (ACU-XE) to crash
Description	When multiple controllers reside in the ProLiant DL590/64 server and ACU-XE is used to scan through all of the controllers' property pages, an exception error occurs and a Dr. Watson log file is generated.
Workaround	To access the information available in the controller property pages, do the following: 1. Close all browser windows. 2. Restart the ACU-XE application. 3. Reopen Internet Explorer and access the controller property pages that you were previously viewing.
Solution	HP and Microsoft are investigating ways to resolve this issue.
Issue 8	Upgrading miniport driver for a secondary controller requires system reboot
Description	When upgrading a miniport driver for a secondary HP/Compaq array controller, the OS requests that the system be rebooted. The miniport driver being upgraded is supporting an array controller that is not the boot controller. The controller being supported by the upgraded miniport driver does not contain any disks, partitions, or volumes within which the page file resides.
Workaround	Reboot the system.
Solution	HP and Microsoft are investigating ways to resolve this issue.

For more information

Table 5 lists the Internet links noted throughout this document as well as additional links that you might find helpful when investigating HP solutions for Microsoft Windows Server 2003, Enterprise Edition.

Table 5. HP Web Resources

Resource description	Web address
HP and Microsoft Frontline Partnership website brings together HP's technologies and services with Microsoft's leadership in operating systems and applications to deliver powerful IT solutions to support your business-from hand-held personal computing to global, enterprise-wide computing systems.	www.hp.com/partners/microsoft
ProLiant DL590/64 Product Marketing site provides product information about the ProLiant DL50/64 server.	http://h18000.www1.hp.com/products/servers/proliantdl590/

Resource description	Web address
Array Configuration Utility XE site includes key benefits, what's new, questions and answers, product documentation as well as the ability to download the software.	http://h18000.www1.hp.com/products/servers/proliantstorage/software-management/acu_matrix.html
HP software and drivers site allows downloading of the latest support software, drivers, utilities, and agents and provides information about software enhancements and fixes.	http://h18023.www1.hp.com/support/files/server/us/index.html

Feedback

Help us improve our technical communication. Let us know what you think about the technical information in this document. Your feedback is valuable and will help us structure future communications. Please send your comments to: OSIntegrationFeedback@hp.com.

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